

**This Page Is Inserted by IFW Operations
and is not a part of the Official Record**

BEST AVAILABLE IMAGES

**Defective images within this document are accurate representations of
the original documents submitted by the applicant.**

Defects in the images may include (but are not limited to):

- **BLACK BORDERS**
- **TEXT CUT OFF AT TOP, BOTTOM OR SIDES**
- **FADED TEXT**
- **ILLEGIBLE TEXT**
- **SKEWED/SLANTED IMAGES**
- **COLORED PHOTOS**
- **BLACK OR VERY BLACK AND WHITE DARK PHOTOS**
- **GRAY SCALE DOCUMENTS**

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

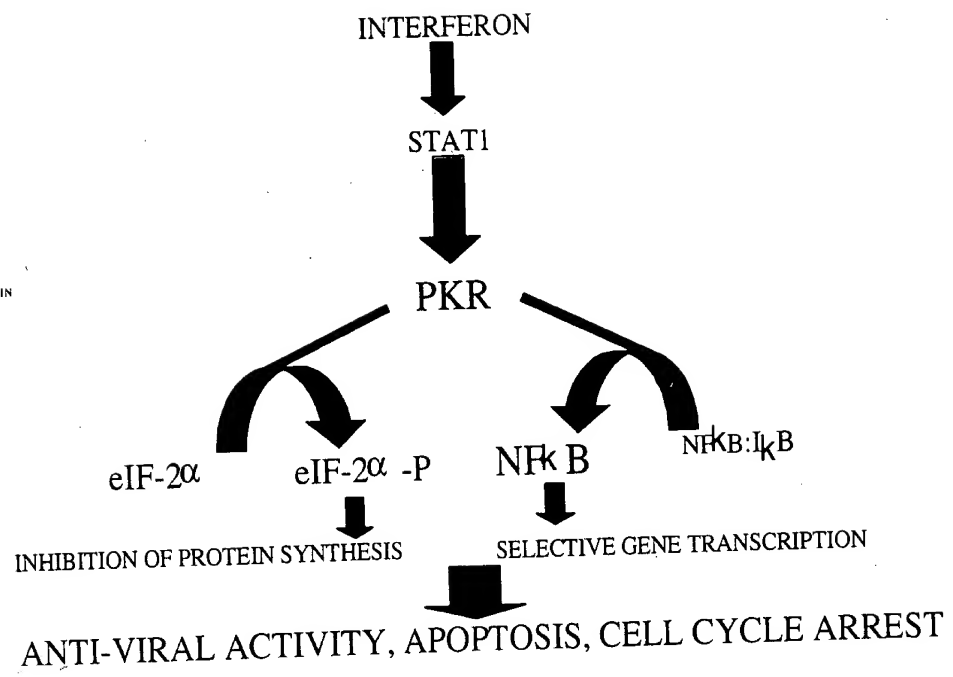


FIGURE 1

008100-11115500

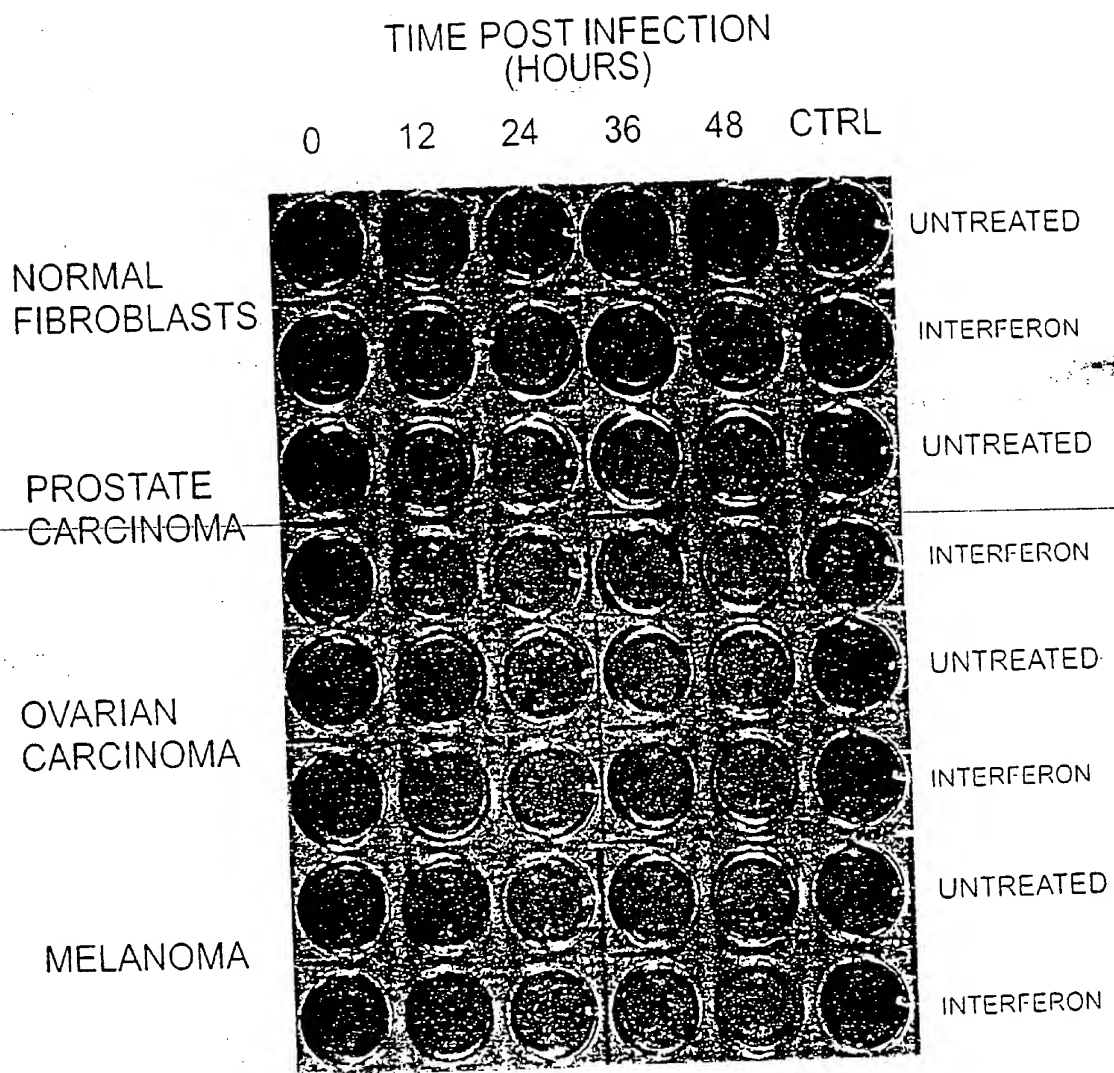
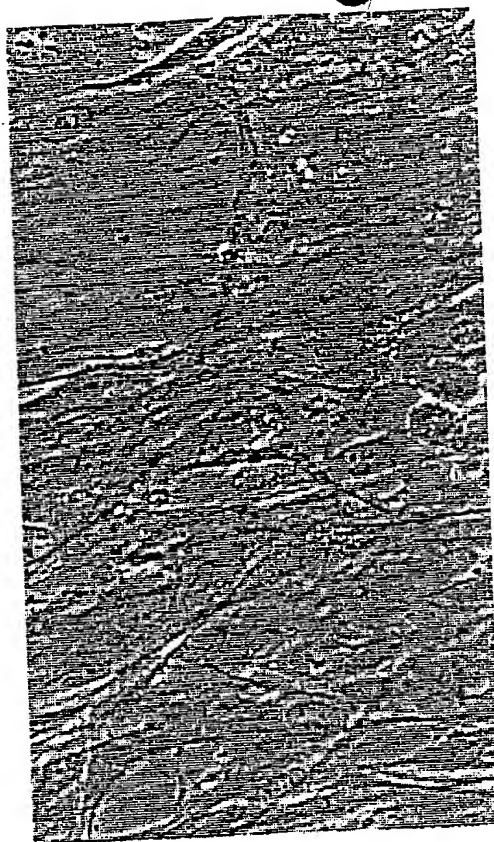


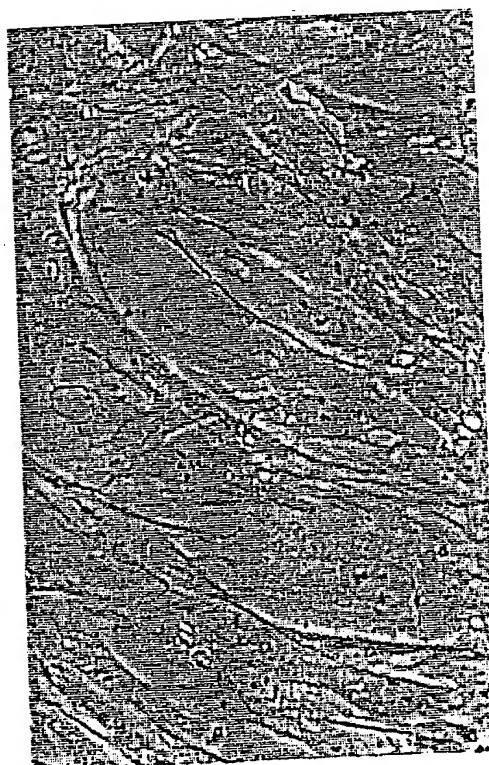
FIGURE 2

005150-11115500

VSV INFECTION OF NORMAL HUMAN FIBROBLASTS



VSV MOI 1 PFU/18
HOURS

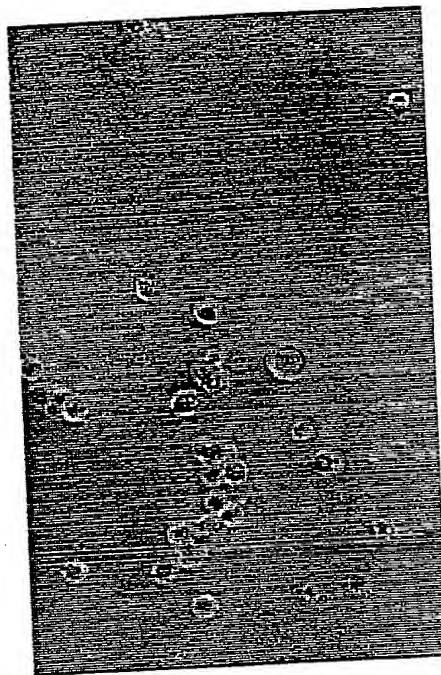


MOCK INFECTED

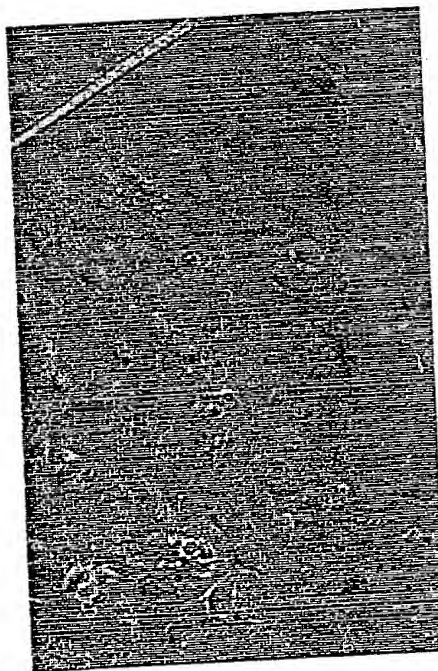
FIGURE 3A

006766-11115900

VSV INFECTION OF OVCAR433



VSV 0.1PFU/18 HRS

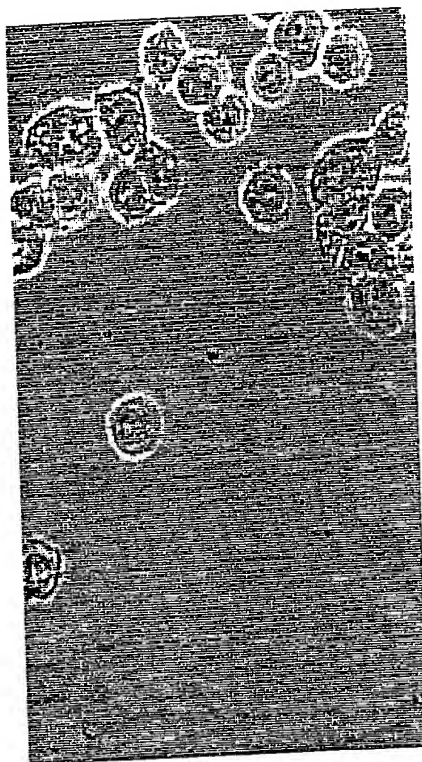


MOCK INFECTED

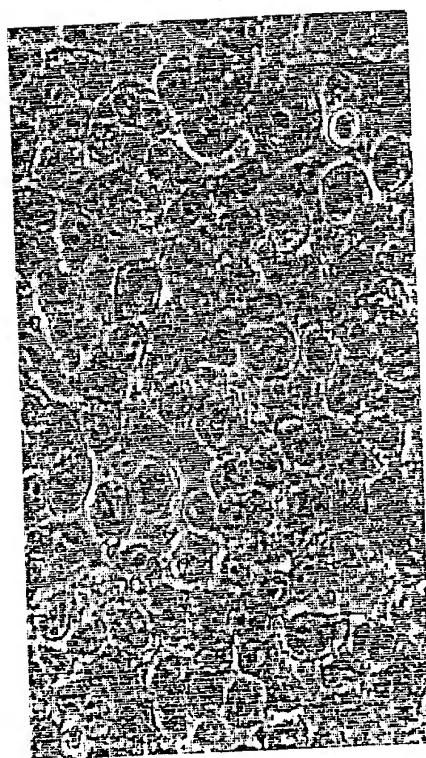
FIGURE 3B

008160-44443560

VSV INFECTION OF KB CELLS



VSV moi 1 PFU/18HRS



MOCK INFECTED

FIGURE 3C

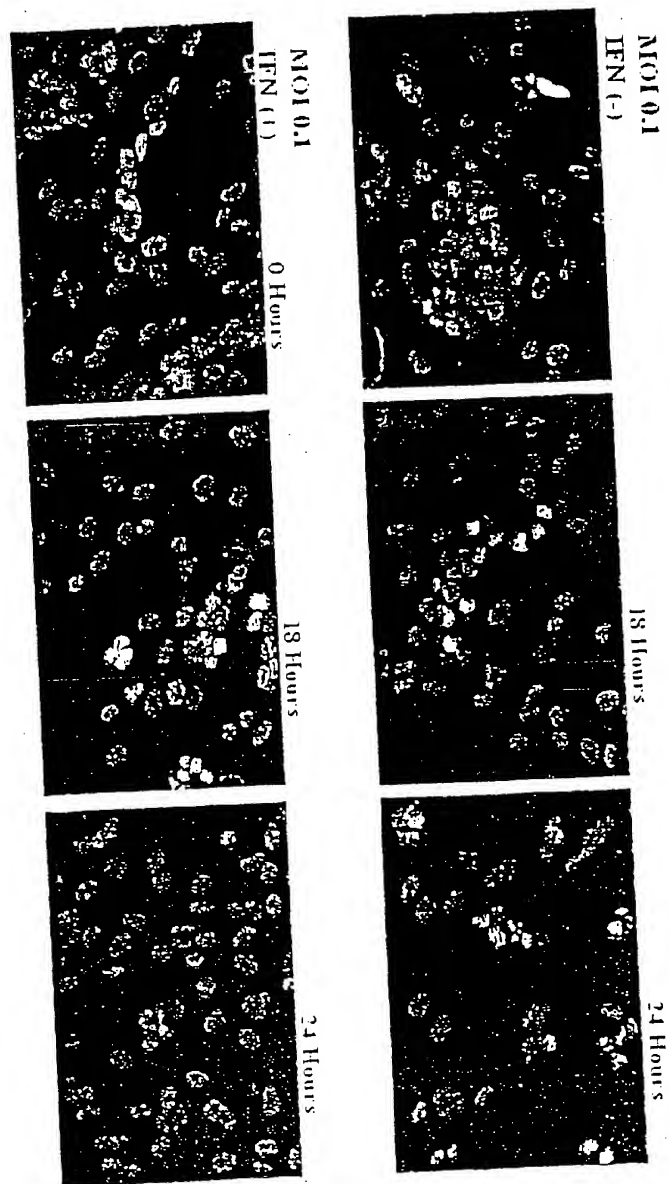


FIGURE 4

0954444-094900

006160-11115560

Nude Mouse Tumours

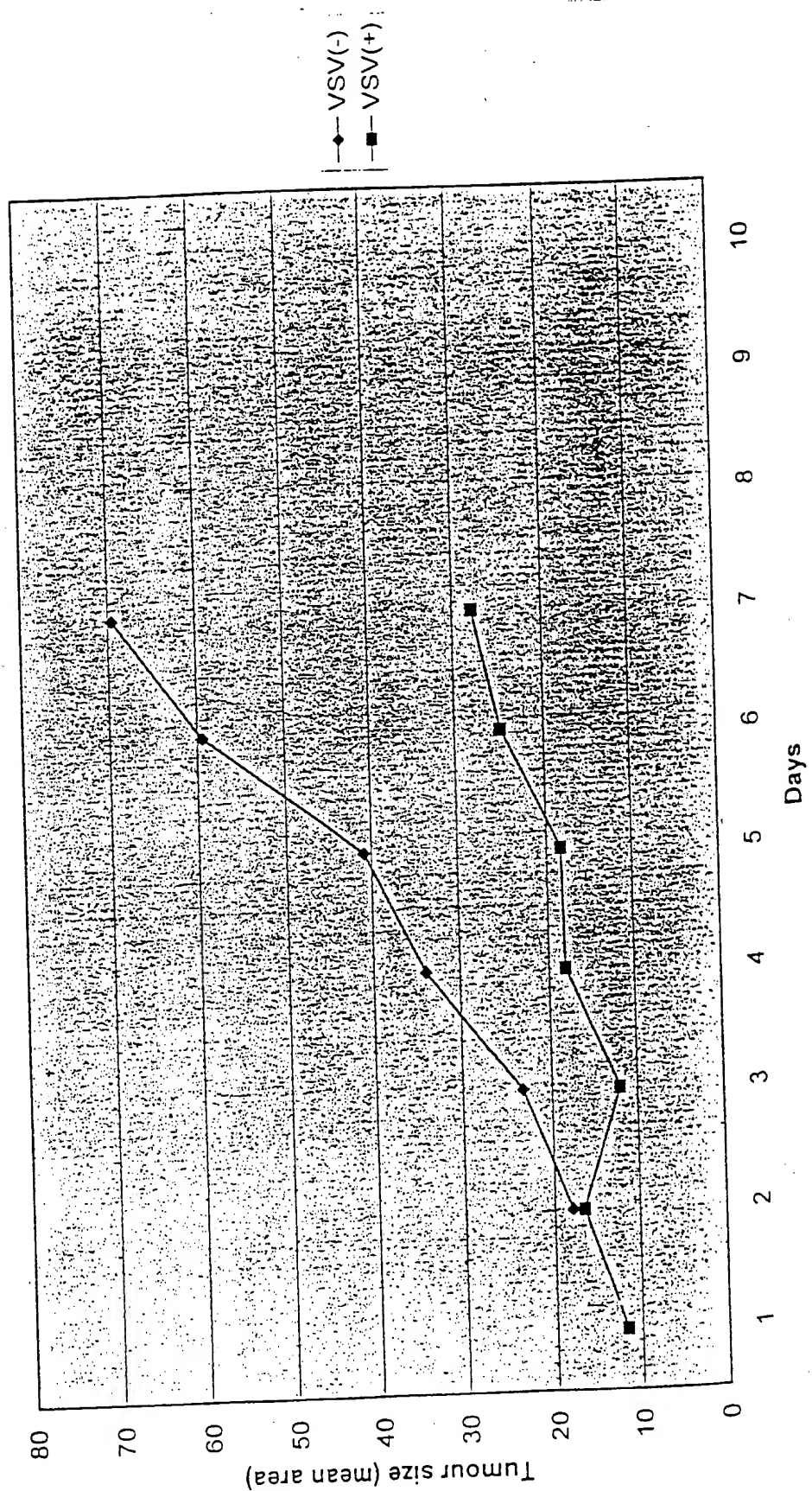


FIGURE 15

00000-11115500

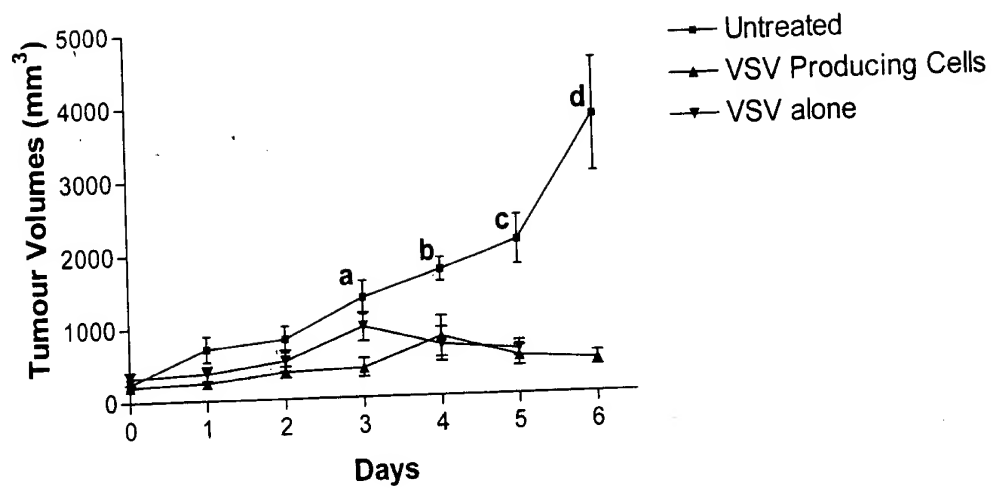
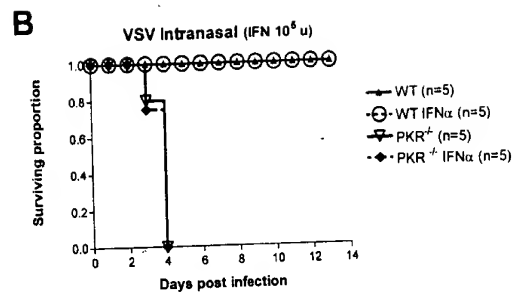
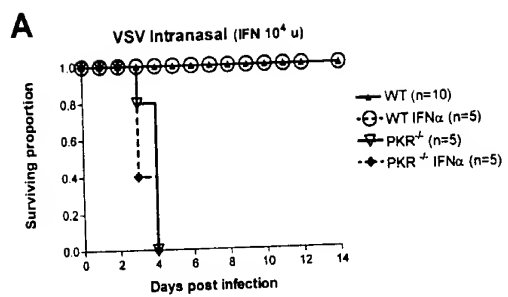


FIGURE 7



FIGURES 8A AND 8B

000000000000000000

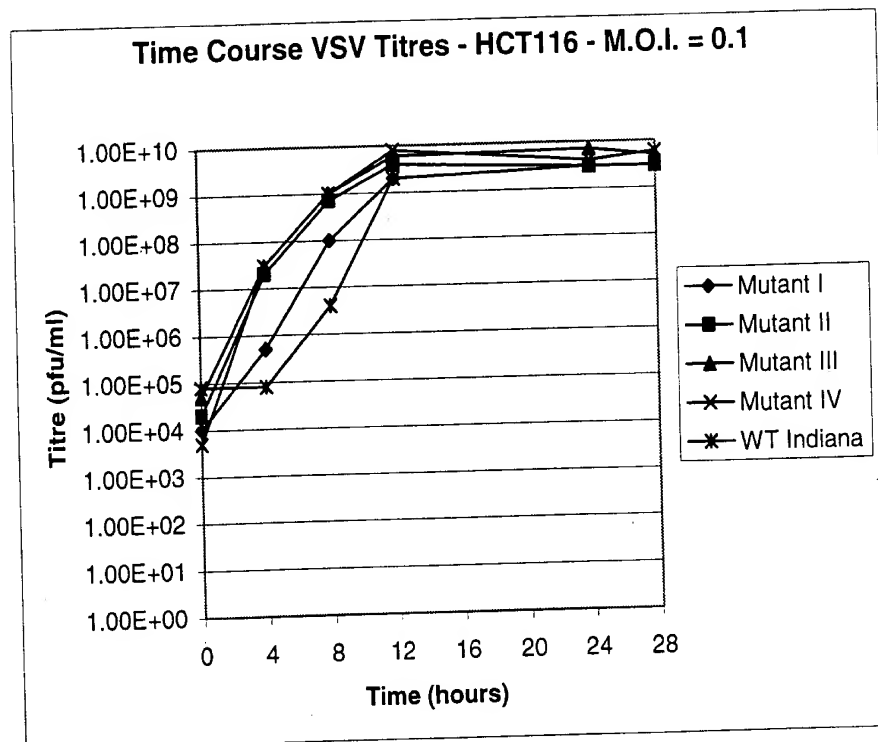


FIGURE 10A

000000000000000000

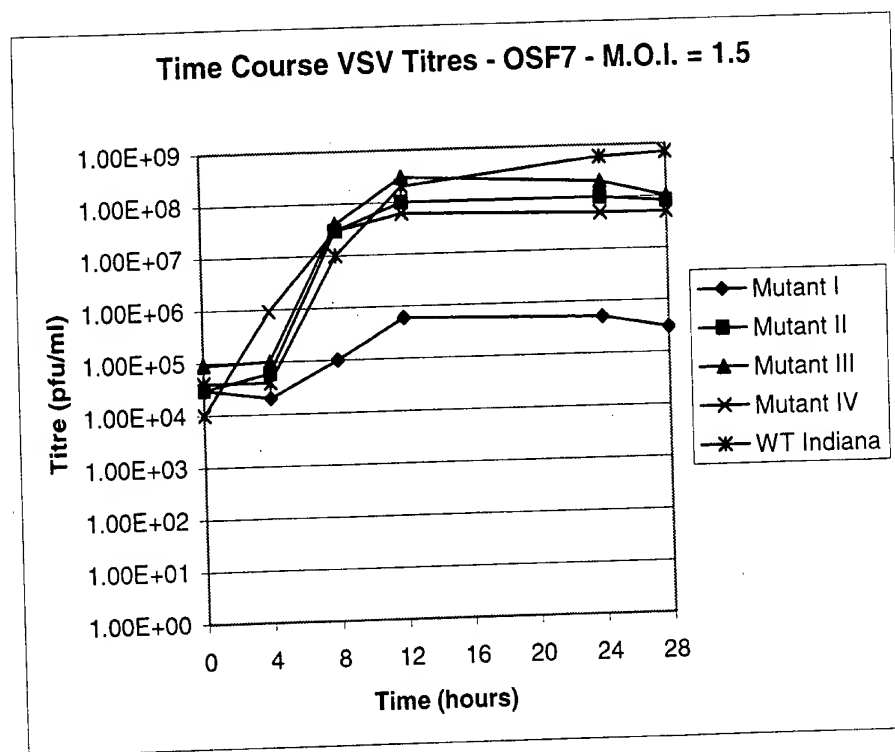


FIGURE 10B

00000-00000000

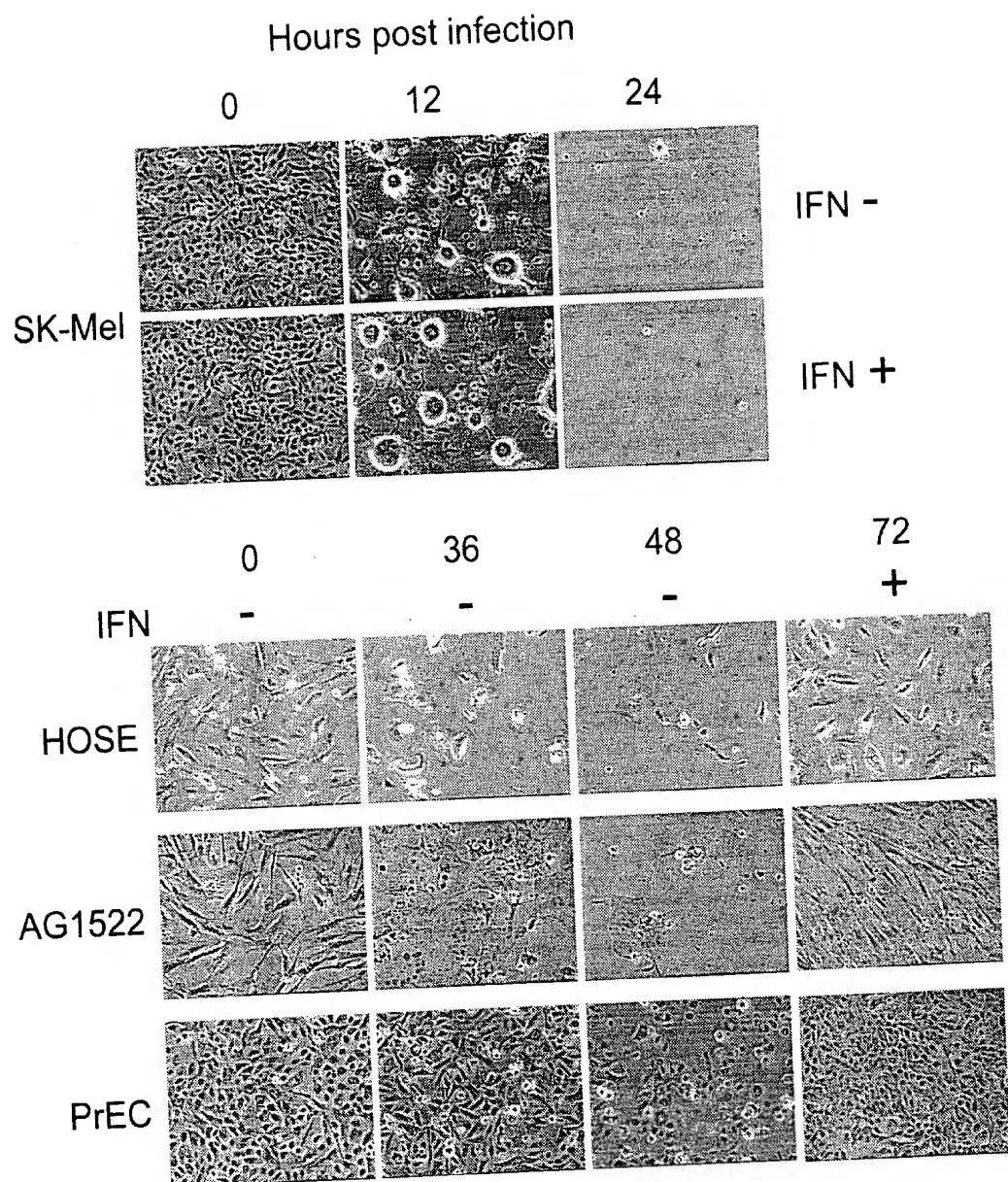


FIGURE 12

00000-11113300

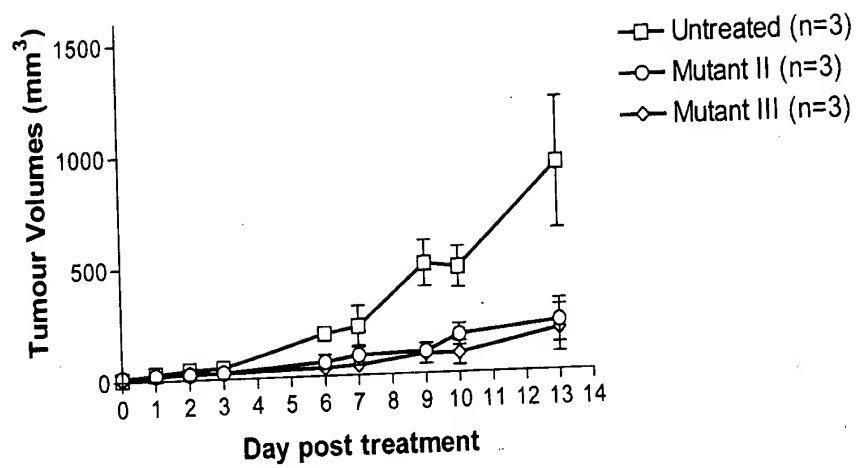


FIGURE 13

481 540
 GenBank N nucl. ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
 HR N nucl. ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
 M2 N nucl. ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
 M3 N nucl. ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
 M4 N nucl. ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC

541 600
 GenBank N nucl. ATTTTGTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
 HR N nucl. ATTTTGTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
 M2 N nucl. ATTTTGTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
 M3 N nucl. ATTTTGTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
 M4 N nucl. ATTTTGTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG

601 660
 GenBank N nucl. TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACCTATTGTTTCC
 HR N nucl. TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACCTATTGTTTCC
 M2 N nucl. TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACCTATTGTTTCC
 M3 N nucl. TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACCTATTGTTTCC
 M4 N nucl. TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACCTATTGTTTCC

661 720
 GenBank N nucl. AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
 HR N nucl. AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
 M2 N nucl. AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
 M3 N nucl. AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
 M4 N nucl. AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG

721 780
 GenBank N nucl. TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
 HR N nucl. TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
 M2 N nucl. TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
 M3 N nucl. TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
 M4 N nucl. TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA

781 840
 GenBank N nucl. ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTTCATACATGCCTTATTTGATCGAC
 HR N nucl. ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTTCATACATGCCTTATTTGATCGAC
 M2 N nucl. ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTTCATACATGCCTTATTTGATCGAC
 M3 N nucl. ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTTCATACATGCCTTATTTGATCGAC
 M4 N nucl. ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTTCATACATGCCTTATTTGATCGAC

841 900
 GenBank N nucl. TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCTGCCTTCCACTTCTGG
 HR N nucl. TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCTGCCTTCCACTTCTGG
 M2 N nucl. TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCTGCCTTCCACTTCTGG
 M3 N nucl. TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCTGCCTTCCACTTCTGG
 M4 N nucl. TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCTGCCTTCCACTTCTGG

FIGURE 14-2

GenBank P nucl.

1 60
 GenBank P nucl.: ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTGATCAGGCG
 HR P nucl.: ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG
 M2 P nucl.: ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG
 M3 P nucl.: ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG
 M4 P nucl.: ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG

61 120
 GenBank P nucl.: GTAGGAGAGATAGATGAGATCGAAGCACAAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
 HR P nucl.: GTAGGAGAGATAGATGAGATCGAAGCACAAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
 M2 P nucl.: GTAGGAGAGATAGATGAGATCGAAGCACAAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
 M3 P nucl.: GTAGGAGAGATAGATGAGATCGAAGCACAAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
 M4 P nucl.: GTAGGAGAGATAGATGAGATCGAAGCACAAACGAGCTGAAAAGTCCAATTATGAGTTGTTC

121 180
 GenBank P nucl.: CAAGAGGAGGAGTGAAGAGCATACTAGCCCTCTTATTTTCAGGCAGCAGATGATTCT
 HR P nucl.: CAAGAGGAGGAGTGAAGAGCATACTAGCCCTCTTATTTTCAGGCAGCAGATGATTCT
 M2 P nucl.: CAAGAGGAGGAGTGAAGAGCATACTAGCCCTCTTATTTTCAGGCAGCAGATGATTCT
 M3 P nucl.: CAAGAGGAGGAGTGAAGAGCATACTAGCCCTCTTATTTTCAGGCAGCAGATGATTCT
 M4 P nucl.: CAAGAGGAGGAGTGAAGAGCATACTAGCCCTCTTATTTTCAGGCAGCAGATGATTCT

181 240
 GenBank P nucl.: GACACAGAATCTGAACCAGAAATGAAGACAATCAAGGTTTGTATGCACAGATCCAGAA
 HR P nucl.: GACACAGAATCTGAACCAGAAATGAAGACAATCAAGGTTTGTATGTACCAGATCCGGAA
 M2 P nucl.: GACACAGAATCTGAACCAGAAATGAAGACAATCAAGGTTTGTATGTACCAGATCCGGAA
 M3 P nucl.: GACACAGAATCTGAACCAGAAATGAAGACAATCAAGGTTTGTATGTACCAGATCCGGAA
 M4 P nucl.: GACACAGAATCTGAACCAGAAATGAAGACAATCAAGGTTTGTATGTACCAGATCCGGAA

241 300
 GenBank P nucl.: GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCCTTTAGATGACTATGCGATGAGGAAGTG
 HR P nucl.: GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCCTTTAGATGACTATGCGGATGAGGACGTG
 M2 P nucl.: GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCCTTTAGATGACTATGCGGATGAGGACGTG
 M3 P nucl.: GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCCTTTAGATGACTATGCGGATGAGGACGTG
 M4 P nucl.: GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCCTTTAGATGACTATGCGGATGAGGACGTG

301 360
 GenBank P nucl.: GATGTTGTATTACTTCGACTGGAACACCTGAGCTTGAATCGACGAGCATGGAAG
 HR P nucl.: GATGTTGTATTCACTTCGACTGGAACAGCCTGAGCTTGAATCCGACGAGCATGGAAG
 M2 P nucl.: GATGTTGTATTCACTTCGACTGGAACAGCCTGAGCTTGAATCCGACGAGCATGGAAG
 M3 P nucl.: GATGTTGTATTCACTTCGACTGGAACAGCCTGAGCTTGAATCCGACGAGCATGGAAG
 M4 P nucl.: GATGTTGTATTCACTTCGACTGGAACAGCCTGAGCTTGAATCCGACGAGCATGGAAG

361 420
 GenBank P nucl.: ACCTTACGGTTGACATGCCAGAGGGTTAAGTGGAGAGCAGAAATCCAGTGGCTTTG
 HR P nucl.: ACCTTACGGTTGACATTGCCAGAGGGTTAAGTGGAGAGCAGAAATCCAGTGGCTTTG
 M2 P nucl.: ACCTTACGGTTGACATTGCCAGAGGGTTAAGTGGAGAGCAGAAATCCAGTGGCTTTG
 M3 P nucl.: ACCTTACGGTTGACATTGCCAGAGGGTTAAGTGGAGAGCAGAAATCCAGTGGCTTTG
 M4 P nucl.: ACCTTACGGTTGACATTGCCAGAGGGTTAAGTGGAGAGCAGAAATCCAGTGGCTTTG

FIGURE 16-1

GenBank P nucl. 421 480
 HR P nucl. ACGATTAAAGCAGTCGTTCAAAGTGCCAAACTGGAATCTGGCAGAGTGCACATTTGAA
 M2 P nucl. ACGATTAAAGCAGTCGTTCAAAGTGCCAAACTGGAATCTGGCAGAGTGCACATTTGAA
 M3 P nucl. ACGATTAAAGCAGTCGTTCAAAGTGCCAAACTGGAATCTGGCAGAGTGCACATTTGAA
 M4 P nucl. ACGATTAAAGCAGTCGTTCAAAGTGCCAAACTGGAATCTGGCAGAGTGCACATTTGAA

GenBank P nucl. 481 540
 HR P nucl. GCATCGGGAGAAGGGGTCATATGAAGGAGCGCCAGATAACTCCGGATGTATATAAGGTC
 M2 P nucl. GCATCGGGAGAAGGGGTCATATGAAGGAGCGCCAGATAACTCCGGATGTATATAAGGTC
 M3 P nucl. GCATCGGGAGAAGGGGTCATATGAAGGAGCGCCAGATAACTCCGGATGTATATAAGGTC
 M4 P nucl. GCATCGGGAGAAGGGGTCATATGAAGGAGCGCCAGATAACTCCGGATGTATATAAGGTC

GenBank P nucl. 541 600
 HR P nucl. ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCGATATCAGATGTTTGGTCTCTC
 M2 P nucl. ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCGATATCAGATGTTTGGTCTCTC
 M3 P nucl. ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCGATATCAGATGTTTGGTCTCTC
 M4 P nucl. ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCGATATCAGATGTTTGGTCTCTC

GenBank P nucl. 601 660
 HR P nucl. TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC
 M2 P nucl. TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC
 M3 P nucl. TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC
 M4 P nucl. TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC

GenBank P nucl. 661 720
 HR P nucl. TTGGATGAATTGTTCTCATCTAGAGGAGAGTTTCATCTCTGTGCGAGGTAACGGACGAATG
 M2 P nucl. TTGGATGAATTGTTCTCATCTAGAGGAGAGTTTCATCTCTGTGCGAGGTAACGGACGAATG
 M3 P nucl. TTGGATGAATTGTTCTCATCTAGAGGAGAGTTTCATCTCTGTGCGAGGTAACGGACGAATG
 M4 P nucl. TTGGATGAATTGTTCTCATCTAGAGGAGAGTTTCATCTCTGTGCGAGGTAACGGACGAATG

GenBank P nucl. 721 780
 HR P nucl. TCTCATAAAGAGGCCATCCTGCTCGGCTGAGATACAAAAAGTTGTACAATCAGGCGAGA
 M2 P nucl. TCTCATAAAGAGGCCATCCTGCTCGGCTGAGGTACAAAAAGTTGTACAATCAGGCGAGA
 M3 P nucl. TCTCATAAAGAGGCCATCCTGCTCGGCTGAGGTACAAAAAGTTGTACAATCAGGCGAGA
 M4 P nucl. TCTCATAAAGAGGCCATCCTGCTCGGCTGAGGTACAAAAAGTTGTACAATCAGGCGAGA

GenBank P nucl. 781 798
 HR P nucl. GTCAAATATTCTCTGTAG
 M2 P nucl. GTCAAATATTCTCTGTAG
 M3 P nucl. GTCAAATATTCTCTGTAG
 M4 P nucl. GTCAAATATTCTCTGTAG

FIGURE 16-2

1 60

GenBank M nucl. ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA
HR M nucl. ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA
M3 M nucl. ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA
M4 M nucl. ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA

61 120

GenBank M nucl. GGGATCGCACCACCCCTTATGAAGAGGACACTA⁶CGATGGAGTATGCTCCGAGCGCTCCA
HR M nucl. GGGATCGCACCACCCCTTATGAAGAGGACACTA⁶CGATGGAGTATGCTCCGAGCGCTCCA
M3 M nucl. GGGATCGCACCACCCCTTATGAAGAGGACACTA⁶CGATGGAGTATGCTCCGAGCGCTCCA
M4 M nucl. GGGATCGCACCACCCCTTATGAAGAGGACACTA⁶CGATGGAGTATGCTCCGAGCGCTCCA

121 180

GenBank M nucl. ATTGACAAATCCTATTTTGGAGTTGACGAGATGGACAC⁶CTATGATCCG¹AATCAATTAAGA
HR M nucl. ATTGACAAATCCTATTTTGGAGTTGACGAGATGGACACTCATGATCCGCATCAATTAAGA
M3 M nucl. ATTGACAAATCCTATTTTGGAGTTGACGAGAG⁶GGGACACTCATGATCCGCATCAATTAAGA
M4 M nucl. ATTGACAAATCCTATTTTGGAGTTGACGAGATGGACACTCATGATCCGCATCAATTAAGA

181 240

GenBank M nucl. TATGAGAAATCCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTTCAAGAACA
HR M nucl. TATGAGAAATCCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTTCAAGAACA
M3 M nucl. TATGAGAAATCCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTTCAAGAACA
M4 M nucl. TATGAGAAATCCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTTCAAGAACA

241 300

GenBank M nucl. TACTCAGATGTGGCAGCCGCTGTATCCCATTTGGGATCACATGTACATCGGAATGGCAGGG
HR M nucl. TACTCAGATGTGGCAGCCGCTGTATCCCATTTGGGATCACATGTACATCGGAATGGCAGGG
M3 M nucl. TACTCAGATGTGGCAGCCGCTGTATCCCATTTGGGATCACATGTACATCGGAATGGCAGGG
M4 M nucl. TACTCAGATGTGGCAGCCGCTGTATCCCATTTGGGATCACATGTACATCGGAATGGCAGGG

301 360

GenBank M nucl. AAACGTCCTTCTACAA¹AATCTTGGCTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA
HR M nucl. AAACGTCCTTCTACAA¹AATCTTGGCTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA
M3 M nucl. AAACGTCCTTCTACAA¹AATCTTGGCTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA
M4 M nucl. AAACGTCCTTCTACAA¹AATCTTGGCTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA

361 420

GenBank M nucl. GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCAC¹ACTACTG⁶GAAGGCAGGGCTTAT
HR M nucl. GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCAC¹ACTACTG⁶GAAGGCAGGGCTTAT
M3 M nucl. GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCAC¹ACTACTG⁶GAAGGCAGGGCTTAT
M4 M nucl. GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCAC¹ACTACTG⁶GAAGGCAGGGCTTAT

421 480

GenBank M nucl. TTGCCACA¹AG⁶ATGGGGAAGACCCCTCCCATGTCTCAATGTACCAGAGCACTTCAGAAGA
HR M nucl. TTGCCACACAGAATGGGGAAGACCCCTCCCATGTCTCAATGTACCAGAGCACTTCAGAAGA
M3 M nucl. TTGCCACACAGAATGGGGAAGACCCCTCCCATGTCTCAATGTACCAGAGCACTTCAGAAGA
M4 M nucl. TTGCCACACAGAATGGGGAAGACCCCTCCCATGTCTCAATGTACCAGAGCACTTCAGAAGA

481 540

GenBank M nucl. CCATTCAATATAGGTCTTTACAAGGGAACG²ATTGAGCTCACAAATGACCATCTACGATGAT
HR M nucl. CCATTCAATATAGGTCTTTACAAGGGAACG²ATTGAGCTCACAAATGACCATCTACGATGAT
M3 M nucl. CCATTCAATATAGGTCTTTACAAGGGAACG²ATTGAGCTCACAAATGACCATCTACGATGAT
M4 M nucl. CCATTCAATATAGGTCTTTACAAGGGAACG²ATTGAGCTCACAAATGACCATCTACGATGAT

FIGURE 18-1

		541		600
GenBank	M	nucl.	GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTC AATTCTTCCAAATTTTCTGAT	
	HR	M	nucl.	GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTC AATTCTTCCAAATTTTCTGAT
	M3	M	nucl.	GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTC AATTCTTCCAAATTTTCTGAT
	M4	M	nucl.	GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTC AATTCTTCCAAATTTTCTGAT
		601		660
GenBank	M	nucl.	TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCCTGG	
	HR	M	nucl.	TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCCTGG
	M3	M	nucl.	TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCCTGG
	M4	M	nucl.	TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCCTGG
		661	690	
GenBank	M	nucl.	GTCCTGGATTCTATCAGCCACTTCAAATGA	
	HR	M	nucl.	GTCCTGGATTCTGTCAGCCACTTCAAATGA
	M3	M	nucl.	GTCCTGGATTCTGTCAGCCACTTCAAATGA
	M4	M	nucl.	GTCCTGGATTCTGTCAGCCACTTCAAATGA

FIGURE 18-2

[illegible]

1 60
GenBank G nucl. ATGAAGTGCCTTTTGTACTTAGCTTTTATTTCATGGGGTGAATTGCAAGTTCACCATA
HR G nucl. ATGAAGTGCCTTTTGTACTTAGCTTTTATTTCATCGGGGTGAATTGCAAGTTCACCATA
M2 G nucl.
M3 G nucl. ATGAAGTGCCTTTTGTACTTAGCTTTTATTTCATCGGGGTGAATTGCAAGTTCACCATA
M4 G nucl. ATGAAGTGCCTTTTGTACTTAGCTTTTATTTCATCGGGGTGAATTGCAAGTTCACCATA

61 120
GenBank G nucl. GTTTTTCACACAACCAAAAAGGAACTGGAAAAATGTTCTTCATTATTACCATTATTGC
HR G nucl. GTTTTTCATACAACCAAAAAGGAACTGGAAAAATGTTCTTCCAATTACCATTATTGC
M2 G nucl.
M3 G nucl. GTTTTTCATACAACCAAAAAGGAACTGGAAAAATGTTCTTCCAATTACCATTATTGC
M4 G nucl. GTTTTTCATACAACCAAAAAGGAACTGGAAAAATGTTCTTCCAATTACCATTATTGC

121 180
GenBank G nucl. CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCATACAAGTCAAA
HR G nucl. CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCTTACAAGTCAAA
M2 G nucl.
M3 G nucl. CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCTTACAAGTCAAA
M4 G nucl. CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCTTACAAGTCAAA

240
GenBank G nucl. ATGCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG
HR G nucl. ATGCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG
M2 G nucl.
M3 G nucl. ATGCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG
M4 G nucl. ATGCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG

241 300
GenBank G nucl. GTCACTACTTGTGATTTCGCTGGTATGGACCGAAGTATATAACACAGTCCATCCGATCC
HR G nucl. GTCACTACTTGTGATTTCGCTGGTACGGACCGAAGTATATAACACATTCCATCCGATCC
M2 G nucl.
M3 G nucl. GTCACTACTTGTGATTTCGCTGGTACGGACCGAAGTATATAACACATTCCATCCGATCC
M4 G nucl. GTCACTACTTGTGATTTCGCTGGTACGGACCGAAGTATATAACACATTCCATCCGATCC

360
GenBank G nucl. TTCCTCCATCTGTAGAACAAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACCTGG
HR G nucl. TTCCTCCATCTGTAGAACAAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACCTGG
M2 G nucl.
M3 G nucl. TTCCTCCATCTGTAGAACAAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACCTGG
M4 G nucl. TTCCTCCATCTGTAGAACAAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACCTGG

361 420
GenBank G nucl. CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA
HR G nucl. CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA
M2 G nucl.
M3 G nucl. CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA
M4 G nucl. CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA

421 480
GenBank G nucl. GCGATTGTCCAGGTGACTCCTCACCATTGTGCTGTTGATGAATACACAGGAGAATGGGTT
HR G nucl. GCGATTGTCCAGGTGACTCCTCACCATTGTGCTGTTGATGAATACACAGGAGAATGGGTT
M2 G nucl.
M3 G nucl. GCGATTGTCCAGGTGACTCCTCACCATTGTGCTGTTGATGAATACACAGGAGAATGGGTT
M4 G nucl. GCGATTGTCCAGGTGACTCCTCACCATTGTGCTGTTGATGAATACACAGGAGAATGGGTT

FIGURE 20-1

		481		540
GenBank	G	nucl.	GATTACAGTTCATCAACGGAAAATGCAGCAATACATATGCCCCACTGTCCATAACTCT	
	HR	G	nucl.	GATTACAGTTCATCAACGGAAAATGCAGCAATGACATATGCCCCACTGTCCATAACTCC
	M2	G	nucl.	.....
	M3	G	nucl.	GATTACAGTTCATCAACGGAAAATGCAGCAATGACATATGCCCCACTGTCCATAACTCC
	M4	G	nucl.	GATTACAGTTCATCAACGGAAAATGCAGCAATGACATATGCCCCACTGTCCATAACTCC
		541		600
GenBank	G	nucl.	ACAACCTGGCATTCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG	
	HR	G	nucl.	ACAACCTGGCATTCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG
	M2	G	nucl.	.....
	M3	G	nucl.	ACAACCTGGCATTCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG
	M4	G	nucl.	ACAACCTGGCATTCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG
		601		660
GenBank	G	nucl.	GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTGGAAAGGAGGGGCACAGGG	
	HR	G	nucl.	GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTAGGAAAGGAGGGGCACAGGG
	M2	G	nucl.	.....
	M3	G	nucl.	GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTAGGAAAGGAGGGGCACAGGG
	M4	G	nucl.	GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTAGGAAAGGAGGGGCACAGGG
		661		720
GenBank	G	nucl.	TTCAGAAGTAACTACTTTGCTTATGAACTGGAGCAAGGCCTGCAAAATGCAATACTGC	
	HR	G	nucl.	TTCAGAAGTAACTACTTTGCTTATGAACTGGAGACAAGGCCTGCAAAATGCAGTACTGC
	M2	G	nucl.	.....
	M3	G	nucl.	TTCAGAAGTAACTACTTTGCTTATGAACTGGAGACAAGGCCTGCAAAATGCAGTACTGC
	M4	G	nucl.	TTCAGAAGTAACTACTTTGCTTATGAACTGGAGACAAGGCCTGCAAAATGCAGTACTGC
		721		780
GenBank	G	nucl.	AAGCATTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGAGATGGCTGATAAGGATCTC	
	HR	G	nucl.	AAGCGTTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGAGATGGCTGATAAGGATCTC
	M2	G	nucl.	.....
	M3	G	nucl.	AAGCATTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGAGATGGCTGATAAGGATCTC
	M4	G	nucl.	AAGCGTTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGATGGCTGATAAGGATCTC
		781		840
GenBank	G	nucl.	TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG	
	HR	G	nucl.	TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG
	M2	G	nucl.	.....CCATCTCAG
	M3	G	nucl.	TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG
	M4	G	nucl.	TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG
		841		900
GenBank	G	nucl.	ACCTCAGTGGATGTAAGTCTATTTCAGGACGTTGAGAGGATCTTGATTATTCCTCTGC	
	HR	G	nucl.	ACCTCAGTGGATGTAAGTCTATTTCAGGACGTTGAGAGGATCTTG.....
	M2	G	nucl.	ACCTCAGTGGATGTAAGTCTATTTCAGGACGTTGAGAGGATCTTGATTATTCCTCTGC
	M3	G	nucl.	ACCTCAGTGGATGTAAGTCTATTTCAGGACGTTGAGAGGATCTTGATTATTCCTCTGC
	M4	G	nucl.	ACCTCAGTGGATGTAAGTCTATTTCAGGACGTTGAGAGGATCT.....

FIGURE 20-2

901 960
GenBank G nucl. CAAGAAACCTGGAGCAAAATCAGAGCGGGTCTTCCATCTCTCCAGTGGATCTCAGCTAT
HR G nucl.
M2 G nucl. CAAGAAACCTGGAGCAAAATCAGAGCGGGTCTTCCATCTCTCCAGTGGATCTCAGCTAT
M3 G nucl. CAAGAAACCTGGAGCAAAATCAGAGCGGGTCTTCCATCTCTCCAGTGGATCTCAGCTAT
M4 G nucl.

961 1020
GenBank G nucl. CTTGCTCCTAAAAACCCAGGAACCGGTCTGCTTTCACCATAATCAATGGTACCCTAAAA
HR G nucl.
M2 G nucl. CTTGCTCCTAAAAACCCAGGAACCGGTCTGCTTTCACCATAATCAATGGTACCCTAAAA
M3 G nucl. CTTGCTCCTAAAAACCCAGGAACCGGTCTGCTTTCACCATAATCAATGGTACCCTAAAA
M4 G nucl.

1021 1080
GenBank G nucl. TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC
HR G nucl.
M2 G nucl. TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC
M3 G nucl. TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC
M4 G nucl. TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC

1081 1140
GenBank G nucl. GGAATGATCAGTGGAATACCCAGAAAGGGAAGTGTGGGATGACTGGGCTCCATATGAA
HR G nucl.
M2 G nucl. GGAATGATCAGTGGAATACCCAGAAAGGGAAGTGTGGGATGACTGGGCTCCATATGAA
M3 G nucl. GGAATGATCAGTGGAATACCCAGAAAGGGAAGTGTGGGATGACTGGGCTCCATATGAA
M4 G nucl. GGAATGATCAGTGGAATACCCAGAAAGGGAAGTGTGGGATGACTGGGCTCCATATGAA

1141 1200
GenBank G nucl. GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA
HR G nucl.
M2 G nucl. GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA
M3 G nucl. GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA
M4 G nucl. GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA

1201 1260
GenBank G nucl. TATGATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG
HR G nucl.
M2 G nucl. TATGATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG
M3 G nucl. TATGATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG
M4 G nucl. TATGATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG

1261 1320
GenBank G nucl. TTTGAACATCCTCACATTCAAGACGCTGCTTCGCACTTCCTGATGATGAGACTTTATTT
HR G nucl.
M2 G nucl. TTTGAACATCCTCACATTCAAGACGCTGCTTCGCACTTCCTGATGATGAGACTTTATTT
M3 G nucl. TTTGAACATCCTCACATTCAAGACGCTGCTTCGCACTTCCTGATGATGAGACTTTATTT
M4 G nucl. TTTGAACATCCTCACATTCAAGACGCTGCTTCGCACTTCCTGATGATGAGACTTTATTT

FIGURE 20-3

006766-111115500

```

1321                                     1380
GenBank G nucl. TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTGTTAGAAAGGTTGGTTCAGTAGT
HR G nucl. ....
M2 G nucl. TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTGTTAGAAAGGTTGGTTCAGTAGT
M3 G nucl. TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTGTTAGAAAGGTTGGTTCAGTAGT
M4 G nucl. TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTGTTAGAAAGGTTGGTTCAGTAGT

1381                                     1440
GenBank G nucl. TGGAAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG
HR G nucl. ....
M2 G nucl. TGGAAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG
M3 G nucl. TGGAAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG
M4 G nucl. TGGAAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG

1441                                     1500
GenBank G nucl. GTTCTCCGAGTTGGTATCCATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT
HR G nucl. ....
M2 G nucl. GTTCTCCGAGTTGGTATTTATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT
M3 G nucl. GTTCTCCGAGTTGGTATTTATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT
M4 G nucl. GTTCTCCGAGTTGGTATTTATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT

1501                                     1536
GenBank G nucl. TATACAGACATAGAGATGAACCGACTTGGAAAGTAA
HR G nucl. ....
M2 G nucl. TATACAGACATAGAGATGAACCGACTTGGGAAGTAA
M3 G nucl. TATACAGACATAGAGATGAACCGACTTGGGAAGTAA
M4 G nucl. TATACAGACATAGAGATGAACCGACTTGGGAAGTAA
```

FIGURE 20-4

421 480

GenBank G a.a. FEHPHIQDAASQLPDDESLFFGDTGLSKNPIELVEGWSSWKSSIASFFFIIGLIIGLFL

HR G a.a.

M2 G a.a. FEHPHIQDAASQLPDDETLFFGDTGLSKNPIEFVEGWSSWKSSIASFFFIIGLIIGLFL

M3 G a.a. FEHPHIQDAASQLPDDETLFFGDTGLSKNPIEFVEGWSSWKSSIASFFFIIGLIIGLFL

M4 G a.a. FEHPHIQDAASQLPDDETLFFGDTGLSKNPIEFVEGWSSWKSSIASFFFIIGLIIGLFL

481 512

GenBank G a.a. VLRVGIHLCKIKLHTKKRQIYTDIEMNRLGK

HR G a.a.

M2 G a.a. VLRVGIYLCIKLHTKKRQIYTDIEMNRLGK

M3 G a.a. VLRVGIYLCIKLHTKKRQIYTDIEMNRLGK

M4 G a.a. VLRVGIYLCIKLHTKKRQIYTDIEMNRLGK

FIGURE 21-2

003166-1111356

	541	600
GenBank L nucl.	AACTTGGCGAGGACTTTCAAAGGCAAAGTCAGAAGAAGTTCTCATGGAACGAACATATGC	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	AACTTGGCGAGGACTTTCAAAGGCAAAGTCAGAAGAAGTTCTCATGGAACGAACATATGC	
	601	660
GenBank L nucl.	AGGATTAGGGTTCCCAGCTTGGGTCCTACTTTTATTTTTCAGAAGGATGGGCTTACTTCAAG	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	AGGATTAGGGTTCCCAGCTTGGGTCCTACTTTTATTTTTCAGAAGGATGGGCTTACTTCAAG	
	661	720
GenBank L nucl.	AACTTGATATTCTAATGGACCGAAACTTTCTGTTAATGGTCAAAGATGTGATTATAGGG	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	AACTTGATATTCTAATGGACCGAAACTTTCTGTTAATGGTCAAAGATGTGATTATAGGG	
	721	780
GenBank L nucl.	AGGATGCAAACGGTGCTATCCATGGTATGTAGAATAGACAACCTGTTCTCAGAGCAAGAC	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	AGGATGCAAACGGTGCTATCCATGGTATGTAGAATAGACAACCTGTTCTCAGAGCAAGAC	
	781	840
GenBank L nucl.	ATCTTCTCCCTTCTAAATATCTACAGAATTGGAGATAAAATTGTGGAGAGGCAGGGAAAT	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	ATCTTCTCCCTTCTAAATATCTACAGAATTGGAGATAAAATTGTGGAGAGGCAGGGAAAT	
	841	900
GenBank L nucl.	TTTTCTTATGACTTGATTAAATGGTGGAACCGATATGCAACTTGAAGCTGATGAAATTA	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	TTTTCTTATGACTTGATTAAATGGTGGAACCGATATGCAACTTGAAGCTGATGAAATTA	
	901	960
GenBank L nucl.	GCAAGAGAATCAAGGCCTTTAGTCCCACAATTCCTCATTTTGAAAAATCATATCAAGACT	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	GCAAGAGAATCAAGGCCTTTAGTCCCACAATTCCTCATTTTGAAAAATCATATCAAGACT	
	961	1020
GenBank L nucl.	TCTGTTGATGAAGGGGCAAAAATTGACCGAGGTATAAGATTCCTCCATGATCAGATAATG	
HR L nucl.	.....
M2 L nucl.	.....
M4 L nucl.	TCTGTTGATGAAGGGGCAAAAATTGACCGAGGTATAAGATTCCTCCATGATCAGATAATG	

FIGURE 22-2

	1501	1560
GenBank L nucl.	ACAAAGGCTACCAATTGGAAAGAATTTCTTAAAGAGATTGATGAGAAGGGCTTAGATGAT	
HR L nucl.	ACAAAGGCTACCAATTGGAAAGAATTTCTTAAAGAGATTGATGAGAAGGGCTTAGATGAT	
M2 L nucl.	.....
M4 L nucl.	ACAAAGGCTACCAATTGGAAAGAATTTCTTAAAGAGATTGATGAGAAGGGCTTAGATGAT	
	1561	1620
GenBank L nucl.	GATGATCTAATTATTGGTCTTAAAGGAAAGGAGAGGGAAGTGAAGTTGGCAGGTAGATTT	
HR L nucl.	GATGATCTAATTATTGGTCTTAAAGGAAAGGAGAGGGAAGTGAAGTTGGCAGGTAGATTT	
M2 L nucl.	.....
M4 L nucl.	GATGATCTAATTATTGGTCTTAAAGGAAAGGAGAGGGAAGTGAAGTTGGCAGGTAGATTT	
	1621	1680
GenBank L nucl.	TTCTCCCTAATGTCTTGGAAATTGCGAGAATACTTTGTAATTACCGAATATTTGATAAAG	
HR L nucl.	TTCTCCCTAATGTCTTGGAAATTGCGAGAATACTTTGTAATTACCGAATATTTGATAAAG	
M2 L nucl.	.....
M4 L nucl.	TTCTCCCTAATGTCTTGGAAATTGCGAGAATACTTTGTAATTACCGAATATTTGATAAAG	
	1681	1740
GenBank L nucl.	ACTCATTTCGTCCCTATGTTTAAAGGCCTGACAATGGCGGACGATCTAACTGCAGTCATT	
HR L nucl.	ACTCATTTCGTCCCTATGTTTAAAGGCCTGACAATGGCGGACGATCTAACTGCAGTCATT	
M2 L nucl.	.....
M4 L nucl.	ACTCATTTCGTCCCTATGTTTAAAGGCCTGACAATGGCGGACGATCTAACTGCAGTCATT	
	1741	1800
GenBank L nucl.	AAAAAGATGTTAGATTCTCTCATCCGCCAAGGATTGAAGTCATATGAGGCAATTTGCATA	
HR L nucl.	AAAAAGATGTTAGATTCTCTCATCCGCCAAGGATTGAAGTCATATGAGGCAATTTGCATA	
M2 L nucl.	.....
M4 L nucl.	AAAAAGATGTTAGATTCTCTCATCCGCCAAGGATTGAAGTCATATGAGGCAATTTGCATA	
	1801	1860
GenBank L nucl.	GCCAATCACATTGATTACGAAAAATGGAATAACCACCAAAGGAAGTTATCAAACGGCCCA	
HR L nucl.	GCCAATCACATTGATTACGAAAAATGGAATAACCACCAAAGGAAGTTATCAAACGGCCCA	
M2 L nucl.	.....
M4 L nucl.	GCCAATCACATTGATTACGAAAAATGGAATAACCACCAAAGGAAGTTATCAAACGGCCCA	
	1861	1920
GenBank L nucl.	GTGTTCCGAGTTATGGGCCAGTTCTTAGGTTATCCATCCTTAATCGAGAGAACTCATGAA	
HR L nucl.	GTGTTCCGAGTTATGGGCCAGTTCTTAGGTTATCCATCCTTAATCGAGAGAACTCATGAA	
M2 L nucl.	.....
M4 L nucl.	GTGTTCCGAGTTATGGGCCAGTTCTTAGGTTATCCATCCTTAATCGAGAGAACTCATGAA	
	1921	1980
GenBank L nucl.	TTTTTTGAGAAAAGTCTTATATACTACAATGGAAGACCAGACTTGATGCGTGTTTACAAC	
HR L nucl.	TTTTTTGAGAAAAGTCTTATATACTACAATGGAAGACCAGACTTGATGCGTGTTTACAAC	
M2 L nucl.	.....
M4 L nucl.	TTTTTTGAGAAAAGTCTTATATACTACAATGGAAGACCAGACTTGATGCGTGTTTACAAC	
	1981	2040
GenBank L nucl.	AACACACTGATCAATTCAACCTCCCAACGAGTTTGTGGCAAGGACAAGAGGGTGACTG	
HR L nucl.	AACACACTGATCAATTCAACCTCCCAACGAGTTTGTGGCAAGGACAAGAGGGTGACTG	
M2 L nucl.	.....
M4 L nucl.	AACACACTGATCAATTCAACCTCCCAACGAGTTTGTGGCAAGGACAAGAGGGTGACTG	

FIGURE 22-4

3661 3720
GenBank L nucl. AGAACAGGGTCTGCCCTTCATAGGTTTTTCGACATCTCGGATGAGCCATGGTGGGTTCGCA
HR L nucl. AGAACAGGGTCTGCCCTTCATAGGTTTTTCGACATCTCGGATGAGCCATGGTGGGTTCGCA
M2 L nucl.
M4 L nucl. AGAACAGGGTCTGCCCTTCATAGGTTTTTCGACATCTCGGATGAGCCATGGTGGGTTCGCA

3721 3780
GenBank L nucl. TCTCAGAGCACTGCAGCATTGACCAGGTTGATGGCAACTACAGACACCATGAGGGATCTG
HR L nucl. TCTCAGAGCACTGCAGCATTGACCAGGTTGATGGCAACTACAGACACCATGAGGGATCTG
M2 L nucl.
M4 L nucl. TCTCAGAGCACTGCAGCATTGACCAGGTTGATGGCAACTACAGACACCATGAGGGATCTG

3781 3840
GenBank L nucl. GGAGATCAGAATTTGACTTTTTATTCCAAGCAACGTTGCTCTATGCTCAATTACCACC
HR L nucl. GGAGATCAGAATTTGACTTTTTATTCCAAGCAACGTTGCTCTATGCTCAATTACCACC
M2 L nucl.
M4 L nucl. GGAGATCAGAATTTGACTTTTTATTCCAAGCAACGTTGCTCTATGCTCAATTACCACC

3841 3900
GenBank L nucl. ACTGTTGCAAGAGACGGATGGATCACCAGTTGTACAGATCATTATCATATTGCCTGTAAG
HR L nucl. ACTGTTGCAAGAGACGGATGGATCACCAGTTGTACAGATCATTATCATATTGCCTGTAAG
M2 L nucl.
M4 L nucl. ACTGTTGCAAGAGACGGATGGATCACCAGTTGTACAGATCATTATCATATTGCCTGTAAG

3901 3960
GenBank L nucl. TCCTGTTTGAGACCCATAGAAGAGATCACCCCTGGACTCAAGTATGGACTACACGCCCCCA
HR L nucl. TCCTGTTTGAGACCCATAGAAGAGATCACCCCTGGACTCAAGTATGGACTACACGCCCCCA
M2 L nucl.
M4 L nucl. TCCTGTTTGAGACCCATAGAAGAGATCACCCCTGGACTCAAGTATGGACTACACGCCCCCA

3961 4020
GenBank L nucl. GATGTATCCCATGTGCTGAAGACATGGAGGAATGGGGAAGGTTCTGTTGGGACAAGAGATA
HR L nucl. GATGTATCCCATGTGCTGAAGACATGGAGGAATGGGGAAGGTTCTGTTGGGACAAGAGATA
M2 L nucl.
M4 L nucl. GATGTATCCCATGTGCTGAAGACATGGAGGAATGGGGAAGGTTCTGTTGGGACAAGAGATA

4021 4080
GenBank L nucl. AAACAGATCTATCCTTTAGAAGGGAATTGGAAGAATTTAGCACCTGCTGAGCAATCCTAT
HR L nucl. AAACAGATCTATCCTTTAGAAGGGAATTGGAAGAATTTAGCACCTGCTGAGCAATCCTAT
M2 L nucl.
M4 L nucl. AAACAGATCTATCCTTTAGAAGGGAATTGGAAGAATTTAGCACCTGCTGAGCAATCCTAT

4081 4140
GenBank L nucl. CAAGTCGGCAGATGTATAGGTTTTCTATATGGAGACTTGGCGTATAGAAAATCTACTCAT
HR L nucl. CAAGTCGGCAGATGTATAGGTTTTCTATATGGAGACTTGGCGTATAGAAAATCTACTCAT
M2 L nucl.
M4 L nucl. CAAGTCGGCAGATGTATAGGTTTTCTATATGGAGACTTGGCGTATAGAAAATCTACTCAT

4141 4200
GenBank L nucl. GCCGAGGACAGTTCTCTATTTCTCTATCTATACAAGGTCGTATTAGAGGTCGAGGTTTC
HR L nucl. GCCGAGGACAGTTCTCTATTTCTCTATCTATACAAGGTCGTATTAGAGGTCGAGGTTTC
M2 L nucl.
M4 L nucl. GCCGAGGACAGTTCTCTATTTCTCTATCTATACAAGGTCGTATTAGAGGTCGAGGTTTC

FIGURE 22-8

	4741	4800
GenBank L nucl.	AGACATGCTTGCAAGTTCGGGATTGCTAAGGATAATAATAAAGACATGAGCTATCCCCCT	
HR L nucl.	AGACATGCTTGCAAGTTCGGGATTGCTAAGGATAATAATAAAGACATGAGCTATCCCCCT	
M2 L nucl.	.....
M4 L nucl.	AGACATGCTTGCAAGTTCGGGATTGCTAAGGATAATAATAAAGACATGAGCTATCCCCCT	
	4801	4860
GenBank L nucl.	TGGGGAAGGGAATCCAGAGGGACAATTACAACAATCCCTGTTTATTATACGACCACCCCT	
HR L nucl.	TGGGGAAGGGAATCCAGAGGGACAATTACAACAATCCCTGTTTATTATACGACCACCCCT	
M2 L nucl.	.....
M4 L nucl.	TGGGGAAGGGAATCCAGAGGGACAATTACAACAATCCCTGTTTATTATACGACCACCCCT	
	4861	4920
GenBank L nucl.	TACCCAAAGATGCTAGAGATGCCTCCAAGAATCCAAAATCCCCTGCTGTCCGGAATCAGG	
HR L nucl.	TACCCAAAGATGCTAGAGATGCCTCCAAGAATCCAAAATCCCCTGCTGTCCGGAATCAGG	
M2 L nucl.	.....
M4 L nucl.	TACCCAAAGATGCTAGAGATGCCTCCAAGAATCCAAAATCCCCTGCTGTCCGGAATCAGG	
	4921	4980
GenBank L nucl.	TTGGGCCCAATTACCAACTGGCGCTCATTATAAAATTCGGAGTATATTACATGGAATGGGA	
HR L nucl.	TTGGGCCCAGTTACCAACTGGCGCTCATTATAAAATTCGGAGTATATTACATGGAATGGGA	
M2 L nucl.	.....
M4 L nucl.	TTGGGCCCAGTTACCAACTGGCGCTCATTATAAAATTCGGAGTATATTACATGGAATGGGA	
	4981	5040
GenBank L nucl.	ATCCATTACAGGGACTTCTTGAGTTGTGGAGACGGCTCCGGAGGGATGACTGCTGCATTA	
HR L nucl.	ATCCATTACAGGGACTTCTTGAGTTGTGGAGACGGCTCCGGAGGGATGACTGCTGCATTA	
M2 L nucl.	.....
M4 L nucl.	ATCCATTACAGGGACTTCTTGAGTTGTGGAGACGGCTCCGGAGGGATGACTGCTGCATTA	
	5041	5100
GenBank L nucl.	CTACGAGAAAATGTGCATAGCAGAGGAATATTCAATAGTCTGTTAGAATTATCAGGGTCA	
HR L nucl.	CTACGAGAAAATGTGCATAGCAGAGGAATATTCAATAGTCTGTTAGAATTATCAGGGTCA	
M2 L nucl.	.....
M4 L nucl.	CTACGAGAAAATGTGCATAGCAGAGGAATATTCAATAGTCTGTTAGAATTATCAGGGTCA	
	5101	5160
GenBank L nucl.	GTCATGCGAGGCGCCTCTCCTGAGCCCCCAGTGCCCTAGAAACTTTAGGAGGAGATAAA	
HR L nucl.	GTCATGCGAGGCGCCTCTCCTGAGCCCCCAGTGCCCTAGAAACTTTAGGAGGAGATAAA	
M2 L nucl.	.....
M4 L nucl.	GTCATGCGAGGCGCCTCTCCTGAGCCCCCAGTGCCCTAGAAACTTTAGGAGGAGATAAA	
	5161	5220
GenBank L nucl.	TCGAGATGTGTAAATGGTGAAACATGTTGGGAATATCCATCTGACTTATGTGACCCAAGG	
HR L nucl.	TCGAGATGTGTAAATGGTGAAACATGTTGGGAATATCCATCTGACTTATGTGACCCAAGG	
M2 L nucl.	.....
M4 L nucl.	TCGAGATGTGTAAATGGTGAAACATGTTGGGAATATCCATCTGACTTATGTGACCCAAGG	
	5221	5280
GenBank L nucl.	ACTTGGGACTATTTCTCCGACTCAAAGCAGGCTTGGGGCTTCAAATTGATTTAATTGTA	
HR L nucl.	ACTTGGGACTATTTCTCCGACTCAAAGCAGGCTTGGGGCTTCAAATTGATTTAATTGTA	
M2 L nucl.	.....
M4 L nucl.	ACTTGGGACTATTTCTCCGACTCAAAGCAGGCTTGGGGCTTCAAATTGATTTAATTGTA	

FIGURE 22-10

	5281	5340
GenBank L nucl.	ATGGATATGGAAGTTCGGGATTCTTCTACTAGCCTGAAAATTGAGACGAATGTTAGAAAT	
HR L nucl.	ATGGATATGGAAGTTCGGGATTCTTCTACTAGCCTGAAAATTGAGACGAATGTTAGAAAT	
M2 L nucl.	.....
M4 L nucl.	ATGGATATGGAAGTTCGGGATTCTTCTACTAGCCTGAAAATTGAGACGAATGTTAGAAAT	
	5341	5400
GenBank L nucl.	TATGTGCACCGGATTTTGGATGAGCAAGGAGTTTAAATCTACAAGACTTATGGAACATAT	
HR L nucl.	TATGTGCACCGGATTTTGGATGAGCAAGGAGTTTAAATCTACAAGACTTATGGAACATAT	
M2 L nucl.	.....
M4 L nucl.	TATGTGCACCGGATTTTGGATGAGCAAGGAGTTTAAATCTACAAGACTTATGGAACATAT	
	5401	5460
GenBank L nucl.	ATTTGTGAGAGCGAAAAGAATGCAGTAACAATCCTTGGTCCCATGTTCAAGACGGTCGAC	
HR L nucl.	ATTTGTGAGAGCGAAAAGAATGCAGTAACAATCCTTGGTCCCATGTTCAAGACGGTCGAC	
M2 L nucl.	.....
M4 L nucl.	ATTTGTGAGAGCGAAAAGAATGCAGTAACAATCCTTGGTCCCATGTTCAAGACGGTCGAC	
	5461	5520
GenBank L nucl.	TTAGTTCAAACAGAATTTAGTAGTTCTCAAACGCTCGAAGTATATATGGTATGTAAAGGT	
HR L nucl.	TTAGTTCAAACAGAATTTAGTAGTTCTCAAACGCTCGAAGTATATATGGTATGTAAAGGT	
M2 L nucl.	.....
M4 L nucl.	TTAGTTCAAACAGAATTTAGTAGTTCTCAAACGCTCGAAGTATATATGGTATGTAAAGGT	
	5521	5580
GenBank L nucl.	TTGAAGAAATTAATCGATGAACCCAATCCCGATTGGTCTTCCATCAATGAATCCTGGAAA	
HR L nucl.	TTGAAGAAATTAATCGATGAACCCAATCCCGATTGGTCTTCCATCAATGAATCCTGGAAA	
M2 L nucl.	.....
M4 L nucl.	TTGAAGAAATTAATCGATGAACCCAATCCCGATTGGTCTTCCATCAATGAATCCTGGAAA	
	5581	5640
GenBank L nucl.	AACCTGTACGATTCCAGTCATCAGAACAGGAATTTGCCAGAGCAAAGAAGGTTAGTACA	
HR L nucl.	AACCTGTACGATTCCAGTCATCAGAACAGGAATTTGCCAGAGCAAAGAAGGTTAGTACA	
M2 L nucl.	.....
M4 L nucl.	AACCTGTACGATTCCAGTCATCAGAACAGGAATTTGCCAGAGCAAAGAAGGTTAGTACA	
	5641	5700
GenBank L nucl.	TACTTTACCTTGACAGGTATTCCCTCCCAATTCATTCTCTGATCCTTTTGTGAACATTGAG	
HR L nucl.	TACTTTACCTTGACAGGTATTCCCTCCCAATTCATTCTCTGATCCTTTTGTGAACATTGAG	
M2 L nucl.	.....
M4 L nucl.	TACTTTACCTTGACAGGTATTCCCTCCCAATTCATTCTCTGATCCTTTTGTGAACATTGAG	
	5701	5760
GenBank L nucl.	ACTATGCTACAAATATTTCGGAGTACCCACGGGTGTGTCTCATGCGGCTGCCTTAAATCA	
HR L nucl.	ACTATGCTACAAATATTTCGGAGTACCCACGGGTGTGTCTCATGCGGCTGCCTTAAATCA	
M2 L nucl.	.....
M4 L nucl.	ACTATGCTACAAATATTTCGGAGTACCCACGGGTGTGTCTCATGCGGCTGCCTTAAATCA	
	5761	5820
GenBank L nucl.	TCTGATAGACCTGCAGATTTATTGACCATTAGCCTTTTTTATATGGCGATTATATCGTAT	
HR L nucl.	TCTGATAGACCTGCAGATTTATTGACCATTAGCCTTTTTTATATGGCGATTATATCGTAT	
M2 L nucl.	.....
M4 L nucl.	TCTGATAGACCTGCAGATTTATTGACCATTAGCCTTTTTTATATGGCGATTATATCGTAT	

FIGURE 22-11

	6301	6360
GenBank L nucl.	CTACACGAGGAAAACTCTTGGAGAGATTAA.....	
HR L nucl.	CTACATGAGGAAAACTCTTGGAGAGATTAAAAAATCATGAGGAGACTCCAAACTTTAAGT	
M2 L nucl.	.....
M4 L nucl.	CTACATGAGGAAAACTCTTGGAGAGATTAA.....	
	6361	6395
GenBank L nucl.	.....
HR L nucl.	ATGAAAAAACTTTGATCCTTAAGACCTCTTGTG	
M2 L nucl.	.....
M4 L nucl.	.....

FIGURE 22-13[illegible]

		1	60
GenBank L	a.a.	MEVHDFETDEFNDFNEDDYATREFLNPD	IRKFN
HR L a.a.		MEVHDFETDEFNDFNEDDYATREFLNPD	IRKFN
M4 L a.a.		MEVHDFETDEFNDFNEDDYATREFLNPD	IRKFN
GenBank L	a.a.	PIPSMWDSKNWDGVL	HEVDKEA
HR L a.a.		PIPSMWDSKNWDGVL	HEVDKEA
M4 L a.a.		PIPSMWDSKNWDGVL	HEVDKEA
GenBank L	a.a.	EITFDVVETFIRGWGNKPIEYIKKERW	SEVELL
HR L a.a.		EITFDVVETFIRGWGNKPIEYIKKERW	SEVELL
M4 L a.a.		EITFDVVETFIRGWGNKPIEYIKKERW	SEVELL
GenBank L	a.a.	NLARTFKGKVRSSSHGTNICRIRVPSL	GVIIIG
HR L a.a.		NLARTFKGKVRSSSHGTNICRIRVPSL	GVIIIG
M4 L a.a.		NLARTFKGKVRSSSHGTNICRIRVPSL	GVIIIG
GenBank L	a.a.	RMQTVLSMVCRIDNLFSEQDIFSL	LMKL
HR L a.a.		RMQTVLSMVCRIDNLFSEQDIFSL	LMKL
M4 L a.a.		RMQTVLSMVCRIDNLFSEQDIFSL	LMKL
GenBank L	a.a.	ARESRLVPQPPHFENHIKTSVDEGA	HWGH
HR L a.a.		ARESRLVPQPPHFENHIKTSVDEGA	HWGH
M4 L a.a.		ARESRLVPQPPHFENHIKTSVDEGA	HWGH
GenBank L	a.a.	PFIDYYIGLEKLHSQVTMKKIDIVS	PHDH
HR L a.a.		PFIDYYAGLEKLHSQVTMKKIDIVS	PHDH
M4_L.pro		PFIDYYAGLEKLHSQVTMKKIDIVS	PHDH
GenBank L	a.a.	PFKSHVKENTWPTAAQVQDFGDKW	SEVLKH
HR L a.a.		PFKSHVKENTWPTAAQVQDFGDKW	SEVLKH
M4 L a.a.		PFKSHVKENTWPTAAQVQDFGDKW	SEVLKH
GenBank L	a.a.	VRMNPNTPIPSKKVLQTMLDTKATN	LAGRF
HR L a.a.		VRMNPNTPIPSKKVLQTMLDTKATN	LAGRF
M4 L a.a.		VRMNPNTPIPSKKVLQTMLDTKATN	LAGRF
GenBank L	a.a.	FSLMSWKLREYFVITEYLIKTHFV	IEAICI
HR L a.a.		FSLMSWKLREYFVITEYLIKTHFV	IEAICI
M4 L a.a.		FSLMSWKLREYFVITEYLIKTHFV	IEAICI

FIGURE 23-1

GenBank L	a.a.	1201	1260
HR L a.a.		LSNIHSLTGEWTKRQHGFKRTGSALHRFSTSRMSHGGFASQSTAALTRLMATTDTRDL	
M4 L a.a.		LSNIHSLTGEWTKRQHGFKRTGSALHRFSTSRMSHGGFASQSTAALTRLMATTDTRDL	
GenBank L	a.a.	1261	1320
HR L a.a.		GDQNFDFLFQATLLYAQITTTVARDGWITSCTDHYHIACKSCLRPPIEITLDSSMDYTPP	
M4 L a.a.		GDQNFDFLFQATLLYAQITTTVARDGWITSCTDHYHIACKSCLRPPIEITLDSSMDYTPP	
GenBank L	a.a.	1321	1380
HR L a.a.		DVSHVLKTRWNGEGSWGQEIQIYPLEGNWKNLAPAEQSYQVGRIGFLYGDLAYRKSTH	
M4 L a.a.		DVSHVLKTRWNGEGSWGQEIQIYPLEGNWKNLAPAEQSYQVGRIGFLYGDLAYRKSTH	
GenBank L	a.a.	1381	1440
HR L a.a.		AEDSSLFPLSIQGRIRGRGFLKGLLDGLMRASCCQVIHRRSLAHLKR PANAVYGGIYLI	
M4 L a.a.		AEDSSLFPLSIQGRIRGRGFLKGLLDGLMRASCCQVIHRRSLAHLKR PANAVYGGIYLI	
GenBank L	a.a.	1441	1500
HR L a.a.		DKLSVSPFPLSLTRSGPIRDELETIPHKIPTSYPSTNRDMGVIVRNYFKYQCRLIEKGKY	
M4 L a.a.		DKLSVSPFPLSLTRSGPIRDELETIPHKIPTSYPSTNRDMGVIVRNYFKYQCRLIEKGKY	
GenBank L	a.a.	1501	1560
HR L a.a.		RSHYSQLWLFSDVLSIDFIGPFSISTTLLQILYKPFSLGKDKNELRELANLSSLLRSSEG	
M4 L a.a.		RSHYSQLWLFSDVLSIDFIGPFSISTTLLQILYKPFSLGKDKNELRELANLSSLLRSSEG	
GenBank L	a.a.	1561	1620
HR L a.a.		WEDIHVKFFTKDILLCP E EIRHACKFGIAKDNNKDMSYPPWGRESRGTTITIPVYYTTTP	
M4 L a.a.		WEDIHVKFFTKDILLCP E EIRHACKFGIAKDNNKDMSYPPWGRESRGTTITIPVYYTTTP	
GenBank L	a.a.	1621	1680
HR L a.a.		YPKMLEMPRIQNPLLSGIRLGQLPTGAHYKIRSILHGMGIHYRDFLSCGDGSGGMTAAL	
M4 L a.a.		YPKMLEMPRIQNPLLSGIRLGQLPTGAHYKIRSILHGMGIHYRDFLSCGDGSGGMTAAL	
GenBank L	a.a.	1681	1740
HR L a.a.		LRENVHSRGIFNSLLELSGSVMRGASPEPPSALETGGDKSRCVNGETCWEYPSDLC DPR	
M4 L a.a.		LRENVHSRGIFNSLLELSGSVMRGASPEPPSALETGGDKSRCVNGETCWEYPSDLC DPR	
GenBank L	a.a.	1741	1800
HR L a.a.		TWDYFLRLKAGLGLQIDLIVDMMEVRDSSTSLKIETNVRNYVHRILDEQGVLIYKTYGTY	
M4 L a.a.		TWDYFLRLKAGLGLQIDLIVDMMEVRDSSTSLKIETNVRNYVHRILDEQGVLIYKTYGTY	
GenBank L	a.a.	1801	1860
HR L a.a.		ICESEKNAV TILGPMFKTVDLVQTEFSSSQ TSEVYMVCKGLKKLIDEPNPDWSSINESWK	
M4 L a.a.		ICESEKNAV TILGPMFKTVDLVQTEFSSSQ TSEVYMVCKGLKKLIDEPNPDWSSINESWK	

FIGURE 23-3

Accession	Species	Year	Sequence
GenBank L	a.a.	1920	1861 NLYAFQSSEQEFARAKKVSTYFTLTGIPSQFIPDPFVNIETMLQIFGVPTGVSHAAALKS
HR L a.a.			NLYAFQSSEQEFARAKKVSTYFTLTGIPSQFIPDPFVNIETMLQIFGVPTGVSHAAALKS
M4 L a.a.			NLYAFQSSEQEFARAKKVSTYFTLTGIPSQFIPDPFVNIETMLQIFGVPTGVSHAAALKS
GenBank L	a.a.	1980	1921 SDRPADLLTISLFYMAIISYYNINHIRVGPIPPNPPSDGIAQNVGIAITGISFWLSLMEK
HR L a.a.			SDRPADLLTISLFYMAIISYYNINHIRVGPIPPNPPSDGIAQNVGIAITGISFWLSLMEK
M4 L a.a.			SDRPADLLTISLFYMAIISYYNINHIRVGPIPPNPPSDGIAQNVGIAITGISFWLSLMEK
GenBank L	a.a.	2040	1981 DIPLYQQCLAVIQQSFPPIRWEAVSVKGGYKQKWSTRGDGLPKDTRISDSLAPIGNWIRSL
HR L a.a.			DIPLYQQCLAVIQQSFPPIRWEAVSVKGGYKQKWSTRGDGLPKDTRISDSLAPIGNWIRSL
M4 L a.a.			DIPLYQQCLAVIQQSFPPIRWEAVSVKGGYKQKWSTRGDGLPKDTRISDSLAPIGNWIRSL
GenBank L	a.a.	2100	2041 ELVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLRKNTGMIEWINRRISKEDRSILMLKSD
HR L a.a.			ELVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLRKNTGMIEWINRRISKEDRSILMLKSD
M4 L a.a.			ELVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLRKNTGMIEWINRRISKEDRSILMLKSD
GenBank L	a.a.	2110	2101 LHEENSWRD
HR L a.a.			LHEENSWRD
M4 L a.a.			LHEENSWRD

FIGURE 23-4